

Harnaaz Preet Singh

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Education

Purdue University – West Lafayette

May 2024

Bachelor of Science in Computer Engineering

Skills

Languages: Python | C++ | Java | TypeScript/JavaScript | SQL

ML: TensorFlow (Keras) | JAX | PyTorch | scikit-learn | Transformers (BERT) | NumPy | pandas

Web/Tools: React | Next.js | Framer Motion | Supabase | REST APIs | LLM APIs | Docker | Git | Linux | PostgreSQL | AWS (EC2, S3) | GCP

Work Experience

Google

Nov 2024 – Present

Software Engineer, Ads Quality (ProxyBidder ML)

- Developed, optimized, and maintained **TensorFlow** deep learning models (**Python**) for conversion/interaction prediction supporting Google Ads auto-bidding.
- Built **C++** feature engineering and embedding pipelines to compute and validate large-scale training/serving features, emphasizing correctness, efficiency, and offline/online parity.
- Designed and executed offline evaluations and online **A/B experiments** to measure the impact of model and feature changes and guide safe production rollouts.

Saayam For All (Non-Profit)

Oct 2024 – Nov 2024

Full Stack Developer (Volunteer)

- Developed and maintained **React** and **React Native** components for the organization’s web and mobile applications.
- Built microservices using **Spring Boot 3** (JDK 17) and **Python** to support core product functionality.
- Deployed and managed services on **AWS** using Cognito, API Gateway, Lambda, and RDS.

National Clinical Laboratory (Internship)

May 2022 – July 2022

Software Engineering Intern

- Developed a customer-service chatbot using **Python**, **Dialogflow**, and **TensorFlow** to assist with appointment booking and report retrieval.
- Applied **NLP** intent classification and entity extraction to improve query understanding and response quality.
- Integrated the chatbot with backend systems for real-time feedback, improving customer satisfaction by **15%** and reducing response time by **30%**.

Projects

SimplyOCR (simplyocr.com)

2025

- Built a cascading multi-LLM OCR system with automatic model fallback, quality thresholds, and chain-of-thought prompting; auto-detects content type (code, math, tables, receipts) with context-aware actions—error correction for code, **LaTeX** conversion for equations.
- Designed a **4-pass** extraction pipeline—cascading fallback → CoT-enhanced retry with result merging → parallel field re-extraction → consistency validation—to ensure high-quality structured outputs.
- Engineered secure **Next.js** full-stack app with prompt-injection defenses, **Supabase** auth/storage, **Redis** rate limiting, and multi-format exports (CSV, JSON, LaTeX, PDF, DOCX).

Adversarial-Net

2025

- Built a closed-loop adversarial simulation where **reinforcement learning** agents learn policies to bypass detection, modeling real-world attacker/defender dynamics.
- Implemented training and evaluation pipelines (policy optimization, reward design, ablations) to compare agent behaviors under shifting constraints and defenses.
- Instrumented experiment tracking and diagnostics to analyze failure modes, generalization, and robustness across scenarios.

MarketNet

2024

- Developed an **NLP** system to estimate market sentiment from large-scale text streams using transformer-based encoders (**BERT**-style) and feature aggregation.
- Built training/evaluation pipelines and conducted error analysis to improve label quality, calibration, and robustness to noisy inputs.
- Designed data processing for near-real-time updates and model scoring to support time-sensitive signals.

Certifications

Deep Learning Specialization (DeepLearning.AI, Coursera) | **Algorithms Specialization** (Stanford University, Coursera)